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THE STATUS OF THE CALIFORNIA BI-COLORED BLACKBIRD

By JOSEPH MAILLIARD

WITH TWO PHOTOS BY THE AUTHOR

TWO species of a genus must possess at least some one characteristic which is of an absolutely distinct type, form, size, or color in each—no matter how slight it may be, provided that of the one species does not overlap or intergrade with in any degree, that of the other. This characteristic may be the measurement of some certain part or parts, the color of some particular feather or of all the feathers, or the shape of them, no matter how slight the difference provided it is unmistakable and permanent. If there is any proof of intergradation the specific difference falls to the ground, and the more or less varying forms are, for want of a better system, at present described as subspecies.

The status of the genus *Agelaius* does not seem to be a very settled one, and it looks so far as if an insufficient number of specimens—or perhaps it would be better to say specimens from too few localities—had been compared to define the forms with certainty.

The following analysis of the descriptions of the various forms of *Agelaius* was originally made out by the author of this article for his own assistance in studying the group and with the view of making clear the subject as represented. But it is so difficult to approach this matter unaided by something of the sort that it seemed advisable to embody this analysis in the text of this paper. Absolutely nothing in it, however, is meant as a criticism of the work done by others, and all quotations are made for the sole purpose of getting at the facts.

This genus has of late proved extremely interesting to me, but it has been impossible to make the descriptions in the different authorities at my command fit all the cases under observation. First came the difficulty of saying which specimens taken in southern California belonged to the form *Agelaius p. neutralis* (supposedly the southern California form), and which did not. Then a greater difficulty arose in defining where the ranges of *A. gubernator californicus* and *A. phoeniceus neutralis* adjoined in central California. As practically all the other authorities to which I have had access coincide with Mr. Ridgway, who apparently has gone into the matter further than the others, I have selected his "Birds of North and Middle America", Bulletin of the U. S. National Museum, No. 50, as the best to follow in the endeavor to solve these problems.

But let us see how much this work will help us out. In the key to the species of *Agelaius*, p. 322, Part II, leaving out those paragraphs which apply only to *A. tricolor* paragraph *dd* applies to all that follow, so we will commence at paragraph *e* which concerns only the *gubernator* group. This says "middle wing coverts mostly black: or else wing 130 or more", the number referring of course to millimeters. As the paragraphs *f*, *g*, and *gg* apply to the other forms of *gubernator* only we will not consider them at the present moment.

Now, in the first place, what does the expression "middle wing coverts mostly black" mean? Are most of these coverts individually and entirely black? Or are all these individual feathers mostly black? From the text in the actual descriptions it seems proper to adopt the latter interpretation, tho some of the specimens under observation have one or more of the innermost coverts wholly or partly black with no black whatever on any of the others. Then comes "or else wing 130 or more". In this case the word *else* can mean either that less than half (numerically) of the feathers of the middle wing coverts are entirely black, that but few or none are

entirely black, that none are *mostly* black, or that there is less than half the area, or but little or no black on any of them. But if the middle wing coverts are *not* "mostly black" and yet the wing is *less than 130* what happens? Would not such a bird, according to the definitions in the "key", be of another species?

Paragraph *ee* applies to the different forms of *phoeniceus*, and says "middle wing coverts entirely buff, ochraceous or tawny, or if partly tipped with black the wing less than 130 (usually less than 127)." Does not the expression "if partly tipped with black" correspond rather closely with "middle wing coverts mostly black *or else*" of paragraph *e*? So that it comes down to the proposition that when a specimen is found with the middle wing coverts partly tipped with black, if the wing is over 130 mm. it belongs to the *gubernator* group, and if under 130 in the *phoeniceus*. But if this means that this figure is an *average* is it not rather a slight matter upon which to establish a specific foundation? And if this figure is a limit in itself is it not still allowing rather a slight margin? And does it not show that there is every probability of intergradation somewhere? Farther on in the text, under the actual descriptions of the forms, no mention is made of any black tipping whatever in *phoeniceus*, nor to the above quotation from paragraph *ee*, with the exception of a foot note under the description of *A. p. neutralis*, p. 340, where Mr. Ridgway says "Specimens from southern California and northern Lower California seem to be somewhat different from the Great Basin examples, but I do not venture to separate them, the series of specimens being scarcely satisfactory. In adult males of this form many specimens show more or less black tipping to the middle wing coverts, this being observable in some specimens from the interior (Nevada) as well as some of those from the coast (San Diego County, etc.)". Then follows a table of measurements of such specimens, all of the wing averages being under 130. The extremes are not given, nor are the dates on which examples were taken, tho in wing measurements of this genus this is a very important matter, the amount of abrasion in a dry windy climate being so great that but little dependence can be placed upon the wing measurement of specimens taken in late spring or summer in any of our dry valleys where the trade wind blows strongly. My observations in the field lead me to believe that this abrasion is also affected by the food supply, in that where the birds gather their food upon the ground when walking thru dry stiff grass the amount of abrasion will be much greater than where the birds feed in swamps, alfalfa fields or green pasture lands.

Now it happens that the measurements of the different forms of *phoeniceus* and *gubernator* are the only differences given save the black or no black on the middle wing coverts and more or less streaking of the females, mostly on the under parts. As for instance, the description given of *A. gubernator gubernator*, "Birds of North and Middle America", p. 326, is as follows: "Similar to *A. phoeniceus phoeniceus*, but adult with middle wing coverts black or with black tips: the adult female with under parts of body uniform black or sooty and upper parts nearly or quite uniform dusky: wing and tarsus longer, tail, bill, and middle toe shorter".

But every measurement given overlaps those of *A. p. phoeniceus* in the extremes with the single exception of the wings of the females. The number of specimens from which the measurements were taken in this last case being so small, however, (7 in one case and 10 in the other) that there is but little doubt that these also would overlap if a larger number were measured. Now, if all these measurements overlap can they be used in differentiating a *species*? It would seem not, according to the prescribed rules. So that the difference between the two species, in the males, comes down to the matter of black, or no black, on the middle wing coverts and streaking or no streaking on the females, *and nothing else!*

And this is all the distinction that there is to be found in the later manuals and keys—especially those written for the Pacific Coast. There are so many shades of crimson to orange on the lesser wing coverts, and of buffy brown to buffy white on the middle coverts, that the color of these can hardly be considered as a matter of specific determination. In southern California we have the form described as *A. phoeniceus neutralis*, the San Diego Redwing. Let us turn to the description of this form. We will find that it is (Birds of N. & M. Am. p. 339,)—"similar to but smaller than *A. p. sonoriensis*;" but this form is similar to but larger than *richmondi*, which is similar to but slightly smaller than *floridanus*, which is similar to but slightly smaller than *phoeniceus*. Hence, when boiled down, as it were, *A. p. neutralis* is similar to (but smaller (?) or larger (?) than) *A. p. phoeniceus*. As this last form is described as having the "middle wing coverts wholly buff or ochraceous buff" it should follow that *A. p. neutralis* would have this same characteristic. Yet in the foot-note before mentioned is the proof that this characteristic is not constant in *A. p. neutralis*. Is not this a step toward the form called *gubernator*?

As the measurements of *grandis*, which is "similar to *A. g. gubernator*" overlap some of the subspecific forms of *phoeniceus*, and as the description of *grandis* will apply equally well to many specimens of *A. p. neutralis*, which the author has examined most critically, is not this a step toward *phoeniceus*? And are not these steps so decidedly in each other's direction that there is every probability of their colliding with considerable force?

I will state here that we have in our collection (Coll. of J. & J. W. Mailliard, San Francisco, Calif.) several males of *phoeniceus* from Colorado, one from Massachusetts, and one—shown in the accompanying photograph—from South Carolina, loaned by the U. S. National Museum, which show more or less black on the innermost coverts.

The similarity of the two forms, *phoeniceus* and *gubernator*, has evidently been a stumbling block to every one who has endeavored to solve the questions involved, and several authorities in the past have called attention to this. For instance Spencer F. Baird, in the Report of the Pacific Railroad Survey, IX, 1858, p. 526, speaking of *phoeniceus* says: "The middle wing coverts are sometimes uniform brownish to the very tips; sometimes some of these middle coverts are tipped at the end with black, but these black tips are usually of slight extent." Again, *ibid.*, p. 529, speaking of the male of *A. gubernator (californicus)* "the bases of the middle wing coverts are brownish yellow, but the exposed portion is black instead of being brownish yellow as in *phoeniceus*, or white as in *tricolor*. Sometimes, however, by the elongation of the yellowish basal portion, some of this color shows beyond the red, as in *phoeniceus*." And "It was at one time considered that the female of *gubernator* was the darker, but there are 3 specimens before me, (4598, 4599, 4600), which in the amount of light color beneath approximate to *A. phoeniceus*."

Then again, in "North American Birds", Baird, Brewer and Ridgway, Vol. II, p. 160, under *A. phoeniceus*, occurs the following: "The middle wing coverts are usually uniform brownish yellow to the very tips: sometimes some of these middle coverts are tipped with black, but these black tips are usually of slight extent, and indicate immaturity, or else a transition of hybridism or race to *A. gubernator*."

Dr. Elliot Coues, in his "Birds of the Northwest", p. 187, goes further than any of the others, saying: "The so-called species, *A. gubernator*, has not the slightest claim to specific rank—in fact it can hardly be rated as a fair variety.

Of the same size and shape as ordinary *phoeniceus*, with the same scarlet carpus, it only differs, in extreme cases, in not having this red bordered with tawny. This is produced by the restriction of the brownish yellow of the middle wing coverts (in *phoeniceus* occupying the whole length of these feathers) to the basal portion of the feathers, their projecting ends being black, and so failing to produce a tawny bordering to the red. But every imaginable stage is a matter of observation in different specimens, from one extreme to the other, * * *."

In all this confusion of ideas and descriptions there seems to be a missing link, which, when discovered, should smooth out the discrepancies and show us the real status of this species, or at least help us to approach it.

It has recently been my good fortune to come across a large breeding colony of *Agelaius* in central California—Stanislaus County—and to be able to take specimens from time to time from March to November. It happens that except for the habitat of *A. g. californicus* being given as extending into the San Joaquin Valley the whole interior valley land of California—a vast area—is "sidestepped", as it were, in giving the habitat of *Agelaius*. This omission is due without doubt to a paucity of specimens from this region. The series of specimens we have obtained from Stanislaus County were taken not far from the real head of San Francisco Bay (Central Coast region) which is the dwelling place of typical *A. g. californicus*. But these specimens incline mostly to the south-of-Tehachapi form, which is described as *A. phoeniceus neutralis*. Yet, while they conform in this way to the southern race—in size, color, habits, etc., with the exception of a thicker bill than any form given—the males have a decided and in most cases quite extensive black tipping to some or often even to all the feathers of the middle wing coverts during the breeding season, before the tips are badly abraded, and the females, as a rule, have the heavy streaking of the southern bird. Yet both male and female individuals have been taken there which are absolutely indistinguishable from breeding specimens of *A. g. californicus* from the San Francisco Bay region and others which are also indistinguishable except for a slightly thicker bill. There is no reason why two species may not use a common breeding ground, it is true, but when one can obtain from the same flock individuals that are almost typical of either species, and others that vary thru all intermediate grades of coloration, streakings, black or but little black on the middle wing coverts, and all dependable measurements thereof overlapping in both directions, it looks as if the missing link has been found—that *governator* is directly connected with *phoeniceus* and that *A. governator californicus* is rightly *A. phoeniceus californicus*.

Following are some tables of measurements of California birds:

	Col. J. & J. W. M. 7032. Stanislaus Co., Cal. Apr. 24.	Col. J. & J. W. M. 7014. Stanislaus Co., Cal. Apr. 1.	Col. J. & J. W. M. 2472. Marin Co., Cal. June 6.	Col. J. & J. W. M. 6968. Stanislaus Co., Cal. Mar. 11.	Mus. of Zool. U. of C. 693. Riverside Co., Cal. Mar. 31.	U. S. Nat. Mus. South Carolina Feb. 24.
Wing	104.2	104.0	109.0	108.5	105.1	100.9
Tail	77.6	76.8	78.1	82.2	80.0	76.2
Culmen	19.5	19.6	19.0	19.6	19.8	21.2
Depth of bill	11.1	11.5	9.5	10.9	10.1	11.0
Width of bill at base	9.1	8.6	8.2	8.3	8.2	9.8
Width of bill at middle of culmen	4.0	4.0	3.9	4.0	4.1	3.9

In the photograph of six females the specimens are arranged to show the gradation of the streaking on the under parts. Note that the two with least streaking

(nos. 1 and 2) are from Stanislaus County (interior valley region) while no. 3, quite heavily marked, comes from Marin County (central coast region) tho it is supposed to be *A. g. californicus*, and should have but little or no streaking. In fact it is a late spring bird with the feathers badly worn, and must have been much more heavily marked earlier in the season.

The fourth bird from the left (no. 4) is from Stanislaus County also, and is nearly as heavily streaked as are the next two, one of which is from Riverside County, southern California (no. 5) and the other from South Carolina (no. 6). This streaked specimen from Stanislaus County is about an average of the females taken there and is indistinguishable from the majority of females from southern California, while the first specimen on the left, (no. 1) without streaking, is rather

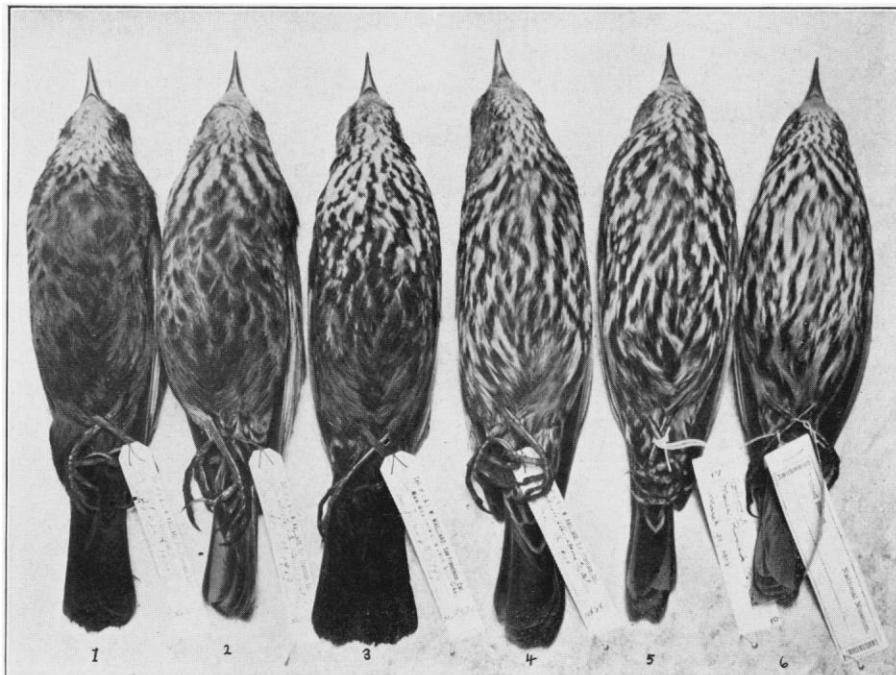


Fig. 22. SERIES OF FEMALES OF *AGELAIUS* ARRANGED TO SHOW THE GRADATION OF STREAKING ON THE VENTRAL SURFACE

rare among the Stanislaus birds but is about the average in the San Francisco Bay region. (See Fig. 22.)

In the photograph of the middle wing coverts of three males the idea was to show the coverts alone. I found this a difficult matter, as it was a delicate operation to part the feathers in such manner as to get the results without damaging specimens which were only loaned. But while the result is rather rough looking the idea itself seems to be carried out sufficiently for the purpose of demonstration. The bird on the left, (no. 1) supposedly *A. gubernator californicus*, showing only black middle wing coverts is from the San Francisco Bay (central coast) region, the center one (no. 2), showing the innermost coverts entirely black and the rest with a decided black tipping is an average bird from Stanislaus County (interior valley region) while the one on the right (no. 3) is from southern California,

described as *A. phoeniceus neutralis*, and shows black innermost coverts with some slight tipping and spotting on the others. Now what are we going to call the middle bird from Stanislaus County? The Marin County bird has a slightly smaller bill than the other two in this photograph, but many specimens overlap in measurements, which intergrade just as much as the coverts in the males and the streakings in the females. (See Fig. 23.)

In these tables the principal measurements are the wing and bill measurements. While the former is not to be altogether depended upon I have used it to some extent, discarding those cases where the primaries seemed to be so badly worn as to be valueless for comparison. I have included the tail, but this was no criterion of any great value, and in the breeding season is generally very badly shortened by wear. The birds from Stanislaus County show a peculiar thickness of the upper

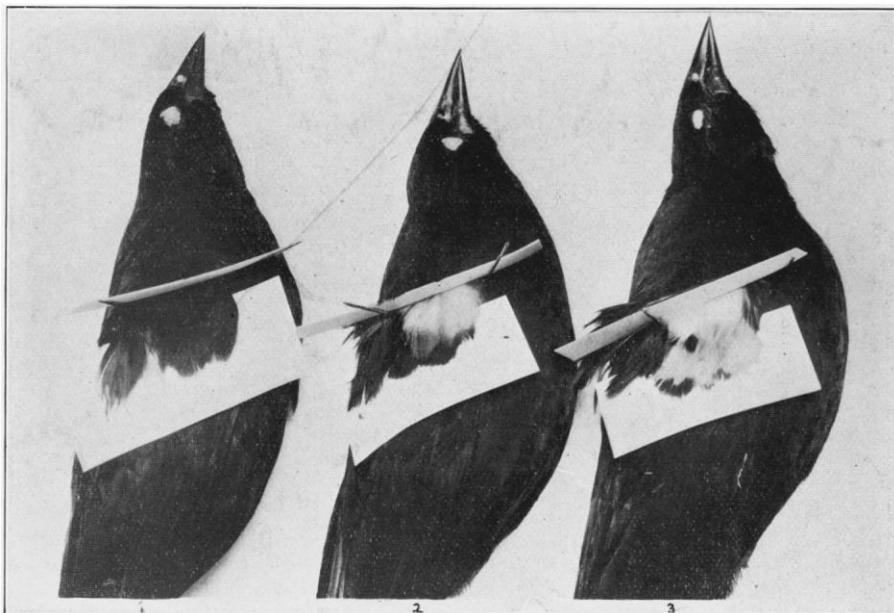


Fig. 23. THREE MALES OF *AGELAIUS* ILLUSTRATING THE VARIATION IN THE MARKINGS OF THE LESSER WING COVERTS

mandible in most cases, and I have endeavored to show this in the form of a measurement by taking the width of the bill at the *center* of the culmen. In order to do this a little instrument was rigged up, with a horizontal ring which could be raised or lowered above a plane surface, to which it was parallel, by means of a screw, the ring being adjusted at half of the culmen as each individual was measured, the bill inserted perpendicularly therein and the width taken by means of a parallel ruler, so arranged that the sharp edges faced each other, laid flat on top of the ring with the bill between the thin edges. As the bills of this species vary so greatly this measurement does not exactly express the differences in heaviness it was intended to show, but it helps to give the idea.

The depth or width of a bill from base is a difficult matter to obtain correctly in bills that are of such conical shape as in *Agelaius*, and probably no two persons would get exactly the same figures, but with care they would come very near doing

so. In these tables all the measurements were taken by myself, according to Mr. Ridgway's rules as given in "Birds of North and Middle America", and gone over twice for the sake of extra accuracy, and yet the more unstable ones are given more for the sake of comparison than as absolute figures.

The measurements of the tarsus, and middle toe without claw were taken in a large number of cases, but, while the averages differed somewhat in specimens from different localities, the extremes varied so little that there was no evidence of these measurements being of value save to show that the southern California birds were a trifle larger than those from the central region of the state.

I had intended to make some comparisons and draw some conclusions from the tables of measurements, when this article was commenced, but beyond the fact that the extremes are constantly overlapping, that the larger number of specimens one examines the greater will be the extremes, great as the variation appears even from the accompanying tables, and that with different series and numbers of specimens from those examined by Mr. Ridgway, in many cases the measurements are very close to his averages, I have only one conclusion to make. That is that the measurements are not to be depended on as a dividing line between *governator* and *phoeniceus*.

But if, as has been shown above, the only other differing characteristic, the middle wing coverts, fails to differentiate is there any dividing line?

<i>Agelaius gubernator californicus</i>					?	Ag. p. neut.		
MALES	13 adts Marin & San Benito Co., Cal.	10 adts Sonomo Co.,Cal.	7 adts Solano Co.,Cal.	5 adts Santa Clara Co.,Cal.	29 adts Stanis- laus Co., Cal.	7 adts North- ern Santa Barbara Co.,Cal.	36 adts South. Cal., Los Ang. &c	
Wing	Average	125.0	127.1	126.0	126.7	126.6	125.2	124.4
	Max.	130.8	134.6	130.8	133.5	133.4	128.6	132.7
	Min.	118.2	122.3	119.8	123.3	120.5	122.6	117.6
Tail	Av.	87.8	88.6	87.2	88.6	91.3	90.3	much worn.
	Max.	92.6	98.0	95.0	92.0	96.6	92.4	
	Min.	78.3	83.5	79.4	86.3	83.4	84.6	
Culmen	Av.	21.7	22.5	22.9	21.5	22.1	22.8	23.0
from	Max.	23.1	24.4	24.3	22.3	24.8	23.3	25.3
base.	Min.	20.5	20.9	21.6	20.5	20.3	22.2	21.1
Depth of bill at	Av.	11.8	11.2	11.6	11.1	12.7	12.8	12.6
base.	Max.	12.1	11.9	12.1	11.4	13.9	13.6	14.1
	Min.	11.2	10.3	11.2	10.3	11.3	12.2	11.3
Width of bill at	Av.	9.3	9.1	9.1	9.1	10.0	10.0	9.9
base.	Max.	9.9	9.6	9.6	9.3	11.7	10.6	11.1
	Min.	8.3	8.6	8.8	8.9	9.3	9.4	9.2
Width of bill at mid. of culmen	Av.	4.2	4.2	4.0	4.5	4.9	4.5	4.5
	Max.	4.6	4.5	4.3	4.8	5.7	4.7	5.4
	Min.	3.7	4.0	3.6	4.3	4.4	4.3	4.4
FEMALES	13 adts	8 adts	2 adts	4 adts	18 adts	2 adts	6 adts	
Breeding plumage								
Wing	Av.	105.6	104.8	104.9	104.9	102.9	badly worn	101.3
	Max.	108.9	109.4	105.7	106.5	109.5		105.2
	Min.	101.5	102.1	104.1	103.9	98.8		96.5
Tail	Av.	72.6	73.9	73.5	72.2	75.0	badly worn	73.3
	Max.	78.9	75.9	76.7	75.4	82.3		78.4
	Min.	68.0	72.6	70.3	69.9	68.2		67.7
Culmen	Av.	18.5	18.9	19.4	18.6	19.3	19.8	19.5
from	Max.	20.6	20.1	19.7	19.2	20.3	20.1	20.4
base.	Min.	17.6	18.1	19.2	17.8	17.8	19.5	19.1

FEMALES		13 adts	8 adts	2 adts	4 adts	18 adts	2 adts	6 adts
Depth of bill at base.	Av.	9.5	9.8	10.1	9.5	10.5	10.3	10.1
	Max.	10.3	10.6	10.6	10.0	11.5	10.4	10.7
	Min.	8.3	8.6	9.7	8.9	9.6	10.2	9.6
Width of bill at base.	Av.	7.8	8.1	7.8	7.7	8.4	8.4	8.3
	Max.	8.3	8.5	8.0	8.5	9.1	8.6	8.8
	Min.	7.5	7.5	7.6	7.3	7.6	8.3	8.1
Width of bill at mid. of culmen	Av.	4.0	3.8	3.4	4.0	4.6	3.9	4.1
	Max.	4.3	4.2	3.6	4.3	5.0	4.2	4.3
	Min.	3.6	3.4	3.3	3.8	4.1	3.7	4.0

Of the thirty-six adults in spring and early summer plumage from southern California nine were molting more or less of the middle wing coverts. On the remaining twenty-seven the black tipping to the middle wing coverts is as follows: heavily tipped, two; considerably, seven; slightly, eight; on one or two of the inner feathers only, eight; spotted only, one; partly black but not tipped, one; with absolutely no black, none.

While some of the specimens from the San Francisco Bay region measure very close to some of those from the San Joaquin Valley, the former seem to have slightly heavier tipping to the middle wing coverts, and the bills of the specimens, from Marin County anyway, are more slender than those from the valley. For example the measurements of two specimens are as follows:

Coll. of J. & J. W. M. no. 3300, San Geronimo, Marin Co., Cal., wing 125.9, tail 90.3, culmen 22.5, depth of bill 11.8, width of bill at base 9.4, width of bill at middle 4.2, no. 7009, Modesto, Stanislaus Co., Cal., wing 125.9, tail 87.4, culmen 22.1, depth of bill 11.4, width of bill at base, 9.2, width of bill at middle 4.2.

These two specimens measure very close to each other, but the San Joaquin (Stanislaus Co.) specimen has a bill that looks heavier, tho there is no way of showing this by measurements unless with very delicate instruments, and while the black tips are heavy in each they are more so in the Marin County bird.

HABITS OF THE BLACK-CAPT VIREO (*VIREO ATRICAPILLUS*)

By C. D. BUNKER

WITH ONE PHOTO BY THE AUTHOR

THE range of the Black-capt Vireo includes south-western Kansas, Oklahoma, central and western Texas, and extends well into Mexico, keeping to the gypsum canyons, or their vicinity, where the bird feeds on a little black beetle found on the under side of leaves, and which, I believe, occurs only in such localities.

In May, 1903, I collected thirty of these birds in Blaine County, Oklahoma, and preserved the stomachs of all of them. There seemed to be but one species of beetle in every stomach. I afterward sent the stomachs to an eastern entomologist, for the purpose of determining the food contents, and to learn if the beetle was peculiar to any certain locality, but unfortunately they were lost and the knowledge not obtained.

Ridgway in his "Birds of North and Middle America" says: "Writers differ as to whether the sexes agree in color, or not. The series examined, which